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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,832	11/04/2003	Katsutoshi Izumi	031258	5574

23850 7590 01/06/2006

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EXAMINER	
JACKSON JR, JEROME	

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 01/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/699,832	IZUMI ET AL.	
	Examiner	Art Unit	
	Jerome Jackson Jr.	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5 and 10-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-5 and 10-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1,3-5,10-13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Linthicum, of record.

The new limitation in claim 1 "formed by locally metamorphosing...into silicon carbide" is process related language and does not structurally distinguish the final product over Linthicum. A product by process claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck 177 USPQ 523; In re Fessman 180 USPQ 324; In re Avery 186 USPQ 161; In re Wertheim 191 USPQ 90; and In re Marosi et al 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process claim, and not the patentability of the

process, and that an old product produced by a new method is not patentable as a product, whether claimed in "product by process claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw makes clear.

Any structural connotation relating to "locally" is not patentable as Linthicum shows "local" areas as in figure 49 where GaN material is located. The final product of claim 1 does not structurally distinguish over figure 49 of Linthicum.

Claims 3 and 4 are rejected as figure 47 or 48 of Linthicum shows nitride or oxide layer 320 positioned on the silicon substrate and not "in" the GaN regions. The claim is broad and undistinguishing over Linthicum.

Claims 5, 10 and 11 are rejected as figure 16 shows "SOI" structure and the label "SOI substrate" would not structurally distinguish over Linthicum who can be labeled in the same manner.

Claims 12 and 13 are rejected as there are polycrystalline GaN regions 308a/310 "on" the nitride/oxide region 320 of figures 47 and 48. The claims are still broad and structurally undistinguishing over Linthicum.

Claims 1,4,5,11 and 13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Arai et al, Jp '039.

Aria shows in figures 10-12 a silicon substrate 1, a SiC local portion 15/16, and a region of GaN 19/20 grown on the SiC. Claim 1 is anticipated or at least obvious depending on the interpretation of "metamorphosing". Note again the product by process caselaw. Claim 4 is also rejected as there are oxide layers 3. Claim 13 is rejected as GaN forms polycrystalline grains on the oxide 3. Claims 5 and 11 are

obvious as it would have been obvious to one of ordinary skill to have practiced SOI structure for better isolation in Arai.

Claims 1,3-5,10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai in view of Sawaki, Jp '646.

Jp '646 shows that it is well known to practice silicon nitride as a mask for GaN growth on Si. Claims 3,10 and 12 are obvious structure as it would have been obvious to use either oxide or nitride as a mask in Arai.

Claims 1,3-5,10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai with Sawaki and further in view of Linthicum.

In regard to SOI Linthicum teaches and suggests SOI for better isolation or design. See figures 16-26 of Linthicum.

Applicant's arguments filed 10/6/05 have been fully considered but they are not persuasive. Arguments directed to process language in the claims have been addressed above. Furthermore, allegations of better GaN guality are not persuasive as the claims do not recite any specific "guality" parameters such as defect density, etc. The allegations are not persuasive of patentability. In regard to the new limitations of claim 4 the above rejection shows that the new claim language does not structurally distinguish over the applied art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerome Jackson Jr. whose telephone number is 571-272-1730. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jj

JEROME JACKSON
PRIMARY EXAMINER